

I. GENERAL DESCRIPTION

The RR-33 is a crystal-controlled transistor AM receiver covering the frequency range of 3 to 12 mc in one band. It can be powered by four self-contained batteries or by any 6-volt DC source plugged into an external battery connector. The receiver consists of a modified CV-2A RF converter together with the essential circuits of a Zenith Model RYL 500D transistor receiver.

II. CHARACTERISTICS

2.1. Receiver

(a) Type:	Superheterodyne, crystal-controlled, amplitude modulated, dual conversion communications receiver.
(b) Frequency Range:	3 to 12 mc in one band.
(c) Power Requirements:	6 volts at 10 to 20 ma (dependent upon audio gain control setting and signal level).
(d) First IF, Second IF, and Image Rejection Ratios:	First IF rejection ratio: 40 db minimum. Second IF rejection ratio: 38 db minimum. Image rejection ratio: 40 db minimum
(e) Sensitivity:	4 to 6 microvolts 10 db S/N ratio, depending upon crystal activity.

(f) Dimensions: 5 3/8" x 3 1/2" x 1 3/4"

(g) Weight (with batteries): 20 ounces

(h) Output Impedance: 15 ohms

2.2. Power Supply

(a) Internal Battery: 4 cells. Eveready type 915 or Burgess type Z. Mallory mercury type ZM-9 cells may also be used.

(b) Battery Life: 40 hours for Eveready type 915 or Burgess type Z, and 120 hours for Mallory mercury type ZM-9.

III. ACCESSORIES

(a) Hank antenna (30 feet).

(b) Earset and cord (this is the earset supplied with the Zenith RYL 500D and has an impedance of 15 ohms to match the output impedance of the receiver).

IV. OPERATING NOTES

4.1. Controls and Functions

The various controls and their functions are listed below. Refer to Figure 1 for location.

(a) Volume control and on-off switch

(b) RF Tuning: Adjusts the RF tuned circuit to any frequency within the range of the receiver.

(c) Oscillator Tuning: Adjusts the variable frequency oscillator to receive signals from the first mixer over a frequency range of approximately 2.795 to

2.805 mc. This control provides a form of fine tuning adjustment for peaking the desired signal for best reception.

4.2. Crystal Selection

The crystal frequency will always equal the operating frequency plus or minus 2.8 mc. The complete frequency range of 3 to 12 mc may be covered with crystals in the frequency range of from 5.8 to 9.2 mc, depending on whether or not the sum or difference frequency is selected.

(a) Because of the simplicity of the circuits used in this receiver there are certain frequencies at which the harmonics of the 455 kc second local oscillator will cause objectionable spurious responses. These frequencies are listed below:

4235 kcs	8925 kcs
4960 kcs	9380 kcs
5145 kcs	9835 kcs
6580 kcs	11370 kcs
7035 kcs	11825 kcs
7490 kcs	

It is recommended that no frequency assignment be made on or within plus or minus 50 kcs of the frequencies listed above.

4.3. Tuning

(a) Plug the proper crystal into the crystal socket (see Figure 1).

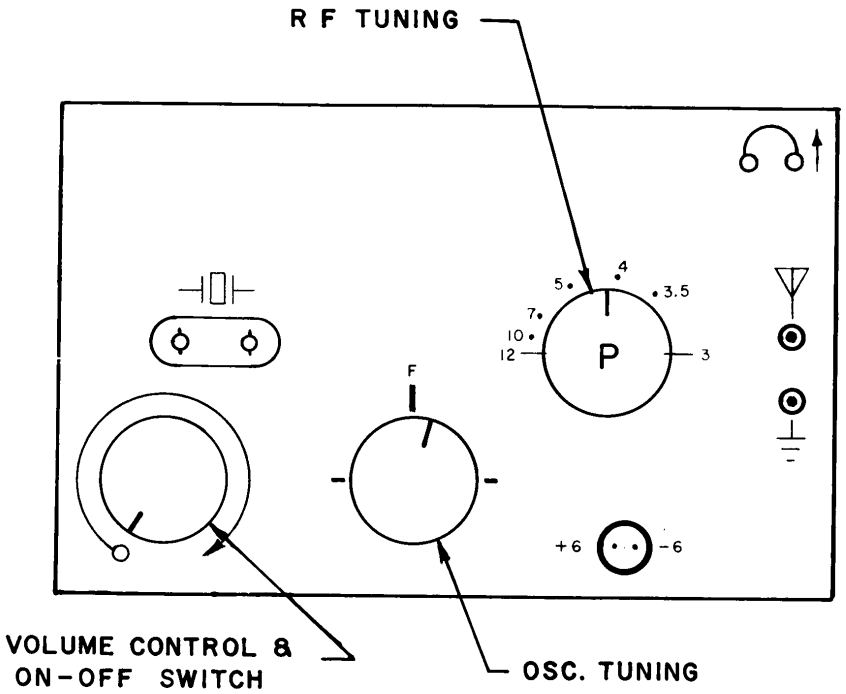
(b) Place the oscillator tuning control in the mid-range position (F).

(c) Adjust the RF tuning control for maximum noise or signal as heard on the earset. Make certain that the tuning control is adjusted for the proper frequency since there is the possibility that at some frequencies maximum noise or signal may be heard at both plus and minus 2.8 mc. The calibration of this control is accurate enough to resolve the 5.6 mc difference in frequency.

(d) Adjust the oscillator tuning control for best reception of the desired signal.

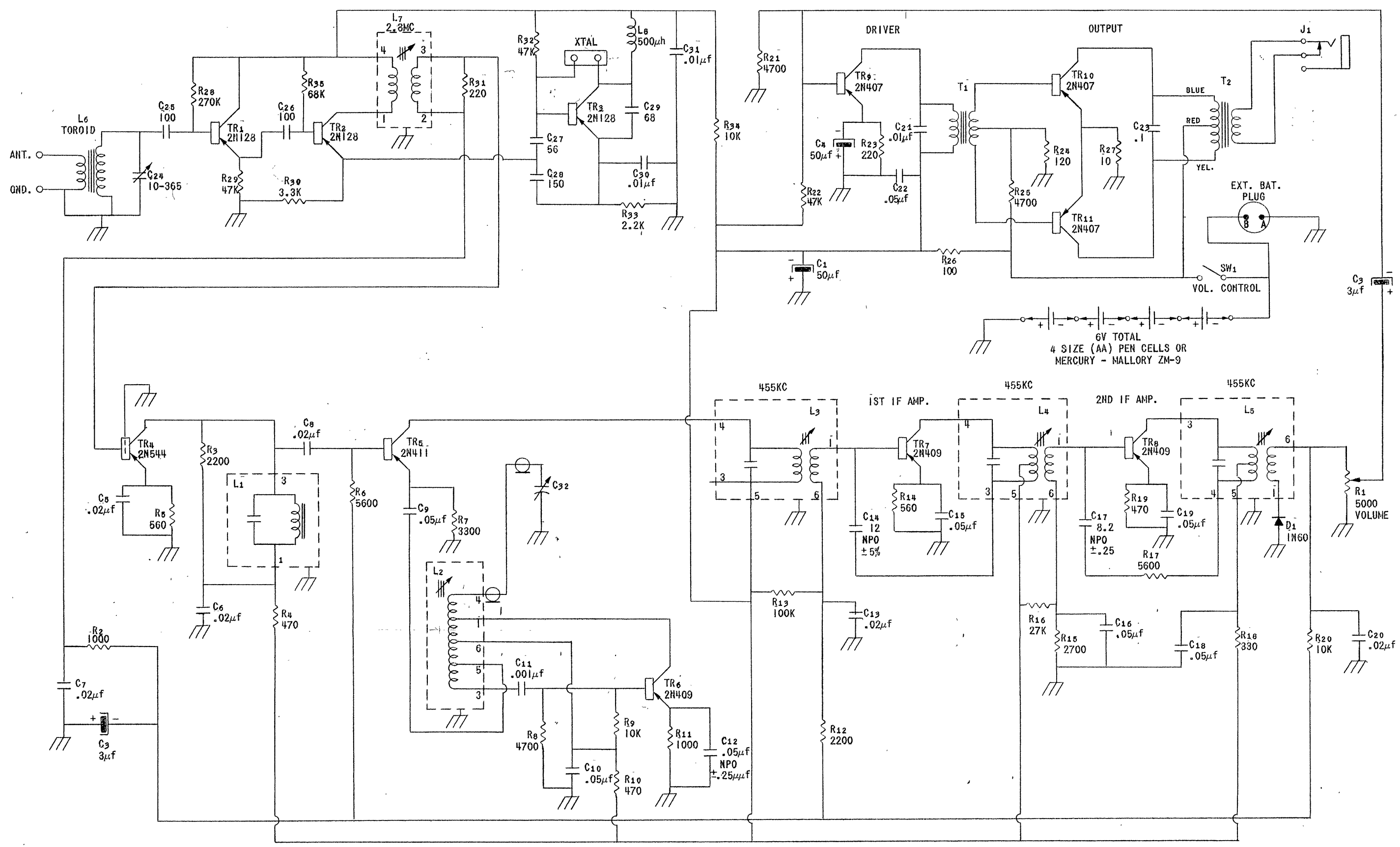
(e) Repeat step (c) for maximum signal strength.

(f) The antenna should be just long enough to obtain sufficient signal strength for the signal of interest. In most cases this will be in the order of from 6 to 10 feet in length. Antennas of greater length than this will only tend to overload the receiver.



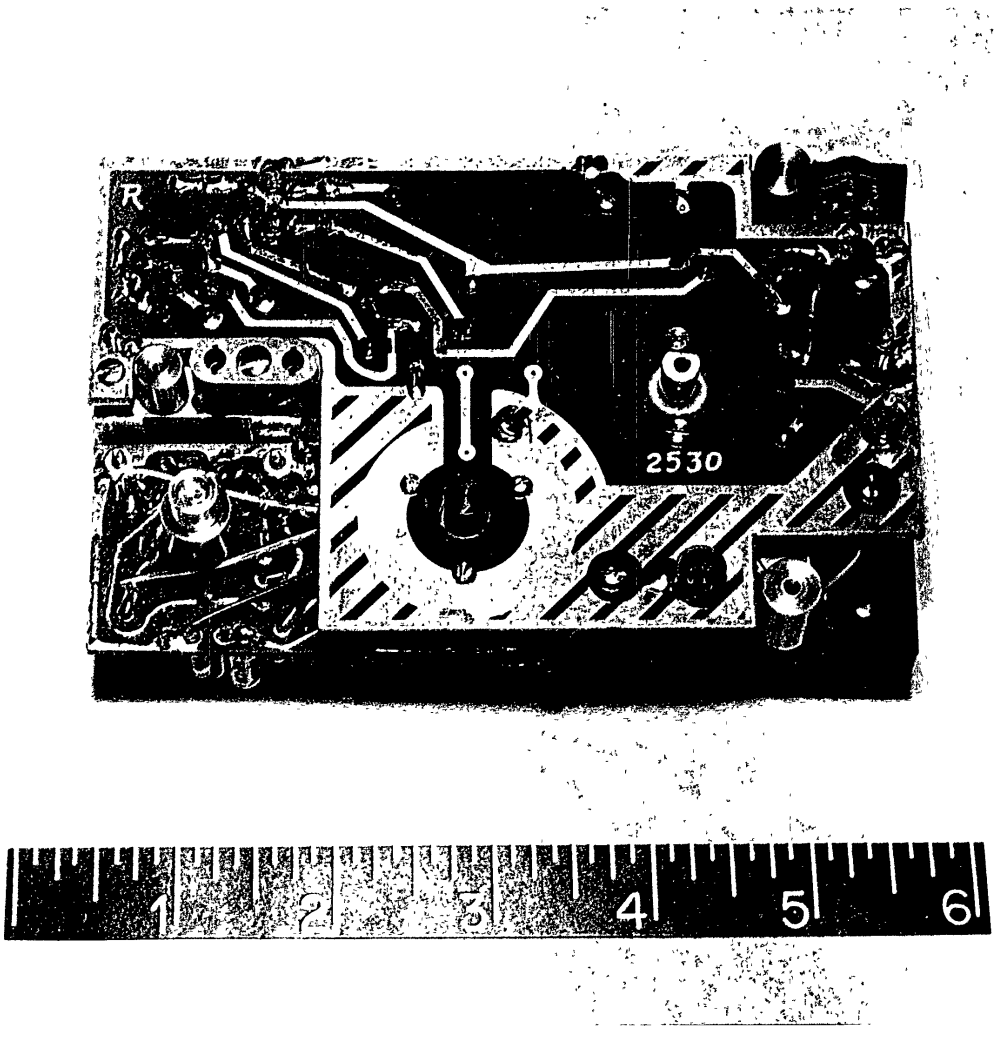
TOP VIEW OF RR-33 RECEIVER

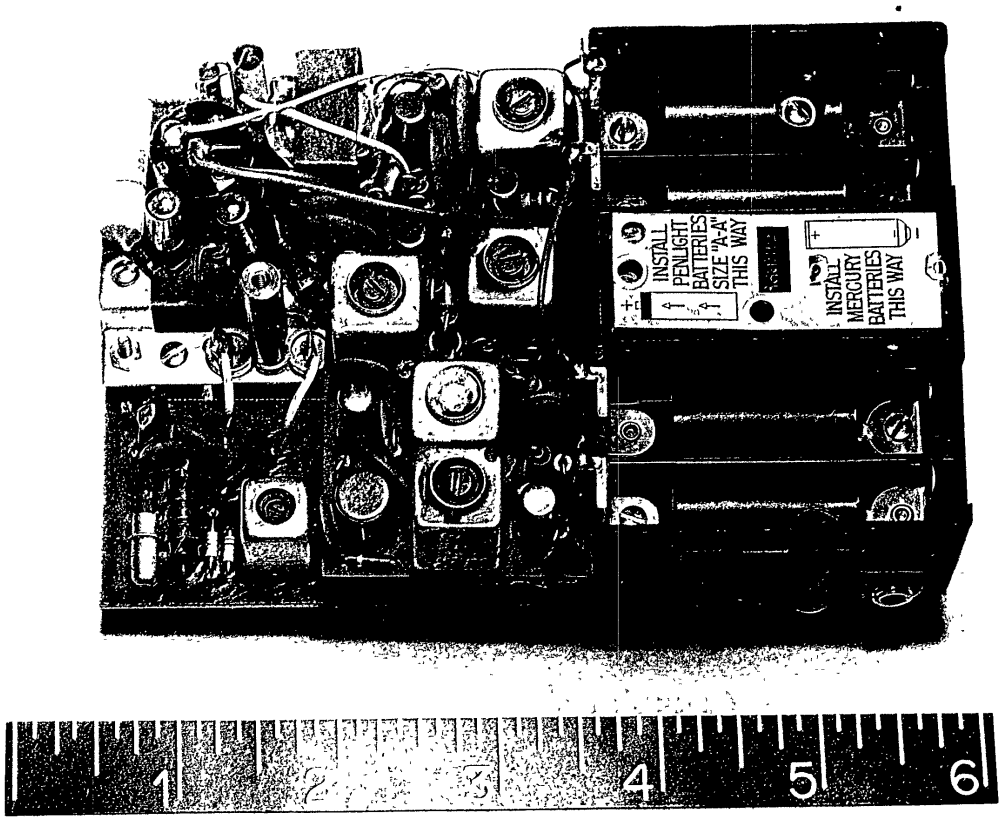
FIGURE 1

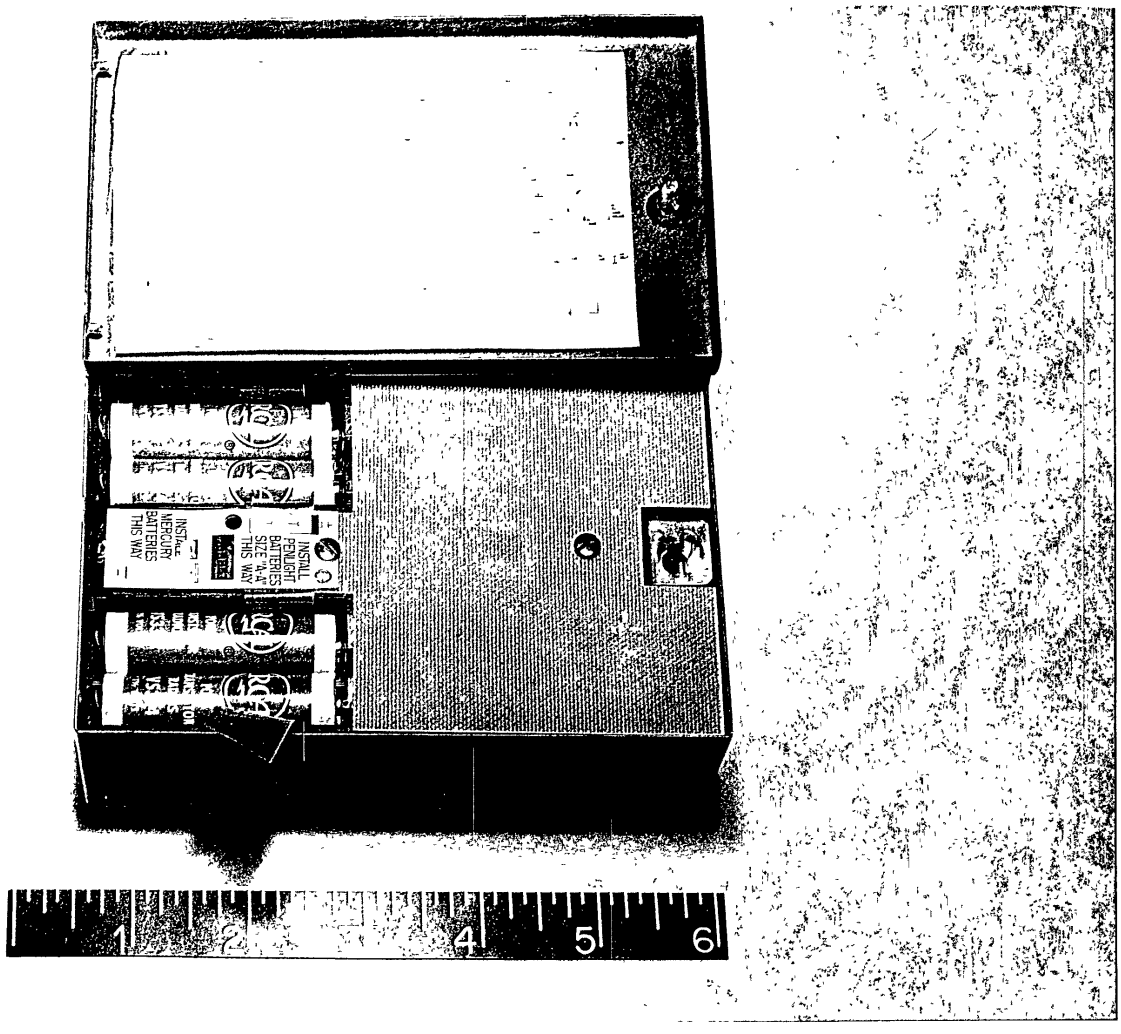


NOTE: 1. ALL RESISTANCE VALUES IN OHMS.
2. ALL CAPACITANCE VALUES IN μμf UNLESS OTHERWISE SHOWN.

TITLE: SCHEMATIC DIAGRAM RR - 33	
DESIGNED BY:	SCALE:
DRAWN BY: cem	DATE:
CHECKED BY:	DWG. NO.:
APPROVED BY:	







Declassified and Approved For Release 2013/02/27 : CIA-RDP78-03535A002000020014-1